SAND CREEK TOWNSHIP • SCOTT COUNTY • MINNESOTA

July 15, 2014

TO: The Board of Commissioners of Scott County

FM: The Town Board of Sand Creek Township

RE: The Magnitude of Today's Decision

Commissioners, Ladies and Gentlemen,

Today, you will be making a decision that will have an impact on our community and our natural systems. This impact of your action will certainly be felt by us, but more importantly, a possible severe burden will be placed on our children and their children in the not so far distant future. It is predicted by concerned citizens and forward thinking professionals that between 2030 and 2050 we will be face to face with the critical reality of the lack of potable water and healthy food.

Responsibly, is this the kind of legacy we want to leave our children and their children and so many other generations yet to be born?

The question is should we act 'proactively' or as usual 'reactively'? The French Planning Concept of 'Les Perspectives' specifies that we should do today what will provide for a vision of the future. The idea is to be 'proactive' today for a desired future. If we procrastinate and defer any responsibility today, and convince ourselves that allowing this proposal to be passed and let the details be worked out in the IUP Phase of the process, we essentially have agreed to the whole mistaken idea of a gravel mining operation. This mining conceivably will impact our water, the very aquifers that we and others live with today and well into the future. In reality, we have given our unwise decisions to others to act reactively - a negative process of mending problems already created by the previous generations. We are then relegated to patching up what was.

I shall point out what some of the critical issues that need to be addressed in the

FEIS. They are:

1. First of all the FEIS is NOT COMPLETE. (See MPCA letter dated 12 - 23 - 2013) whereby they indicated that they would not comment due to insufficient information.

2. The potential of contamination and the magnitude of a contamination is overwhelming. There is not a site that is comparable to this, so there is no track record or president to rely on. As the Developer clearly knows, the analysis that Barr Engineering prepared projected astronomical costs associated with a clean-up any contamination would cause (See Barr Technical Memorandum dated 9-19-2013 & 3-13-2014).

3. Sand Creek Drainage – DNR has a problem with it breaching the berm into the project area (See DNR letter dated 12-20-2013). The cold reality of the past flooding event(s) of this season is a good example of the vulnerable and powerful destruction, contamination and erosion of the Sand Creek Drainage System making it impossible for anyone to manage or prevent it.

4. Statute Laws on Contamination of Ground waters (See attached documents).

5. In the Introduction of the Draft Monitoring and Mitigation Plan dated March 2014 the Scott County Board deemed the final EIS to be inadequate in three areas:

a. address the issues of potential ice jambs

b. address the issues of the potential incursion into the mine pit

c. mitigation for impacts to the quaternary aquifer from periodic flooding of the deep mine pit

6. Potential Ground Water Quality Impacts - types of contaminants should be listed both by the Developer and the open sand mining pit.

7. Pumping Well – 24 wells were identified in the immediate gravel mining area. This does not include the other wells of neighbors that would be contaminated.

8. Metropolitan Council – review of Effect of Mine Pit Draw Down on Wetlands – concern would expose the quaternary aquifer below the site.

The developers attitude and lack of cooperation is of a great concern. They have refused to comply by submitting a mitigation plan in compliance with the review and comment of the FEIS. No real 'End Use Plan' has been submitted, and as with in most situations where the Developer is asked to submit a plan, the response usually is 'we don't

know what the future will be'.

But then again, we have not dug a gravel mine into the underlying aquifers…you haven't yet approved the FEIS leading to a potential destructive, contaminating and erosive ill-advised Gravel Mine in Sand Creek Township…

Please vote to deny the Developers application and be 'proactive' for the future of our community and natural systems.

Thank you,

Cy Wolf

Cy Wolf
Chairman
Town Board of Sand Creek Township, Scott County, Minnesota

attachements:

SCOTT COUNTY
COMMUNITY SERVICES DIVISION
ENVIRONMENTAL HEALTH & INSPECTIONS DEPT
200 FOURTH AVE W
SHAKOPEE, MN 55379-1220
(952) 496-8475 Fax: (952) 496-8496

January 28, 2014

To whom it may concern:

On January 21, 2014, the Scott County Board of Commissioners determined that the Jordan Aggregates Final Envionmental Impact Statement was inadequate and directed staff to work collaboratively with State Agencies to address those elements of the Jordan Aggregates Final Environmental Impact Statement deemed to be inadequate including preparation of a Groundwater Monitoring and Mitigation Plan noted of concern by the Metropolitan Council, MDH and MPCA and impacts associated with Sand Creek noted of concern by the DNR and City of Jordan.

Scott County will proceed according to 4410.2800 Subpart 5 and prepare an adequate EIS within 60 days of receiving authorization from the Project Proposer as evidenced by adequate replenishment their Escrow in accordance with their signed agreement with Scott County. Scott County will circulate the revised FEIS in accordance with part 4410.2700, subpart 3.

Please contact me at 952-496-8351 if you have any questions.

Sincerely,

Kate Sedlacek

Kate Sedlacek
Environmental Health

mitigation need. Similar to the questions raised by the Polymet project. My preference would be to wait and see the outcome of that analysis given the similarities in length of mitigation and uncertainties of what costs will be incurred to mitigate.

Sincerely,

Kate Sedlacek

Scott County Environmental Health

952-496-8351

From: Sedlacek, Kate
Sent: Tuesday, March 11, 2014 11:50 AM
To: 'Brooke.haworth@state.mn.us'; 'Michael.MacDonald@state.mn.us'; 'jennie.skancke@state.mn.us'; 'david.bell@state.mn.us'; 'michele.ross@state.mn.us'; 'theresa.haugen@state.mn.us'; 'karen.kromar@state.mn.us'; 'sette001@umn.edu'; 'tippi001@umn.edu'; 'cywolf01@gmail.com'; Shukle, Ed; 'Mike Waltman'; Nick Bonow; Matthew S. Duffy <MDuffy@mmblawfirm.com> (MDuffy@mmblawfirm.com); 'Gerry Duffy'; 'Steve Hentges'; jmccain@carlsonmccain.com; 'Ray Wuolo'; Swenson, Jason; Schmitz, Martin; Davis, Brad; Nelson, Paul; Frechette, Al
Subject: Draft Jordan Aggregates Groundwater Monitoring and Mitigation Plan

In January, the Scott County Board of Commissioners determined that the Jordan Aggregates Final EIS was inadequate and directed staff to work collaboratively with State Agencies to prepare a Groundwater Monitoring and Mitigation Plan.

Therefore, we have prepared a draft monitoring and mitigation plan for your review. In addition to the monitoring and mitigation plan, we are preparing a cost analysis report that will be enclosed in a subsequent e-mail. We would like to provide you an opportunity to review the plan, comment, and meet to discuss concerns.

It is our intention to have a finalized plan to the County Board by the end of March, in order to meet the 60 day timeline required by rule 4410.2800 Subpart 5. Therefore, please send us your comments by Tuesday March 18th.

You will receive another e-mail soon with the cost analysis and a meeting date to discuss concerns.

Sincerely,

Kate Sedlacek

Scott County Environmental Health

952-496-8351

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3 attachments

Jord_Ag_mon_mit_plan v.3.docx
139K

Figure_3-1.pdf
3380K

Mitigation Approximate Costs-v2.docx
206K

Gmail

Cy Wolf <cywolf01@gmail.com>

Jordan Aggregates County Board meeting

1 message

Sedlacek, Kate <KSedlacek@co.scott.mn.us> Mon, Jul 14, 2014 at 9:34 AM
To: "Matthew S. Duffy <MDuffy@mmblawfirm.com> (MDuffy@mmblawfirm.com)" <MDuffy@mmblawfirm.com>, Gerry Duffy <GDuffy@mmblawfirm.com>, "cywolf01@gmail.com" <cywolf01@gmail.com>, Tim Loose <timlo@bolton-menk.com>, "Nikunen, Tom" <tnikunen@ci.jordan.mn.us>, "McNellis, Susan" <SMcNellis@co.scott.mn.us>, "Frechette, Al" <AFrechette@co.scott.mn.us>

Environmental Health staff will be presenting the Jordan Aggregates revised FEIS to the County Board tomorrow. Please see the attached agenda and Request for Board Action.

Sincerely,

Kate Sedlacek

Scott County Environmental Health

952-496-8351

2 attachments

2014-07-15Agenda.pdf
29K

2014-07-15Agenda[1].pdf
52K

AGENDA #7.1
SCOTT COUNTY, MINNESOTA
REQUEST FOR BOARD ACTION
MEETING DATE: JULY 15, 2014

ORIGINATING DIVISION: **ORIGINATING DEPARTMENT:**	Community Services Environmental Health and Inspections Department	**CONSENT AGENDA:**	☐ Yes ☑ No
PRESENTER:	Kate Sedlacek - 8351	**ATTACHMENTS:**	☑ Yes ☐ No
PROJECT:	Jordan Aggregates EIS	**TIME REQUESTED:**	15 minutes
ACTION REQUESTED:	Adopt Resolution No. 2014-126; To Determine the Adequacy of the Jordan Aggregates Final Environmental Impact Statement (FEIS)		
CONTRACT/POLICY/GRANT:	☐ County Attorney Review ☐ Risk Management Review	**FISCAL:**	☐ Finance Review ☐ Budget Change
ORGANIZATIONAL VALUES:	☐ Provide a Supportive Organizational Culture ☐ Develop Strong Public Partnerships ☑ Manage Challenges and Create Opportunities ☐ Assure Long Term Fiscal Stability ☐ Emphasize Excellence in Customer Service		

DEPARTMENT/DIVISION HEAD SIGNATURE:	**COUNTY ADMINISTRATOR SIGNATURE:**

Approved:		**DISTRIBUTION/FILING INSTRUCTIONS:**
Denied:		
Tabled:		
Other:		
Deputy Clerk :		
Date:		

Background/Justification:

The purpose of this agenda item is to adopt Resolution No. 2014-126; to determine the adequacy of the Jordan Aggregates Final Environmental Impact Statement (FEIS).

On January 21, 2014, the Scott County Board of Commissioners determined that the Jordan Aggregates Final EIS was inadequate and directed staff to work collaboratively with State Agencies to address those elements of the EIS deemed to be inadequate including preparation of a Groundwater Monitoring and Mitigation Plan.

Staff has prepared a Groundwater Monitoring and Mitigation plan to the satisfaction of the Minnesota Pollution Control Agency, MN Department of Natural Resources, MN Department of Health, MN Geologic Survey, Sand Creek Township, and the City of Jordan. Also, a cost analysis of the proposed groundwater monitoring and mitigation was prepared to assist in determining the financial security that may be needed for mine permit.

Staff believe that the Jordan Aggregates FEIS, Groundwater Monitoring and Mitigation Plan, and cost analysis provide sufficient information to help governmental units make better-informed decisions on required permits. Staff recommend that the Board find the Final Environmental Impact Statement for Jordan Aggregates to be adequate and direct staff to prepare findings and recommendations for further consideration of an Interim Use Permit by the Scott County Planning Commission and County Board.

Fiscal Impact:

None

BOARD OF COUNTY COMMISSIONERS
SCOTT COUNTY, MINNESOTA

Date:	July 15, 2014
Resolution No.:	2014-126
Motion by Commissioner:	
Seconded by Commissioner:	

RESOLUTION NO. 2014-126; TO DETERMINE THE ADEQUACY OF THE JORDAN AGGREGATES FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)

WHEREAS, Scott County is the Regulatory Governmental Unit in the preparatioin of the Environmental Impact Statement (EIS) for the Jordan Aggregate LLC Proposed Mining Project located at 17825 Valley View Dr in Sand Creek Township, Scott County, Minnesota; and

WHEREAS, the Final Environmental Impact Statement is based on the establishement of a 84.7 acre sand and gravel mining operation; and

WHEREAS, Scott County has submitted a copy of the Final Environmental Impact Statement to all public agencies on the Environmental Impact Statement distribution list, publishing Environmental Impact Statement availablitiy in the Environmental Quality Board Monitor on June 23, 2014, all of which were done in accordance with applicable State laws, rules, and regulations; and

WHEREAS, the 10 business day comment period ended on July 7th, 2014; and

WHEREAS, Scott County acknowledges the comments from the Metropolitan Council, Minnesota Department of Natural Resources, Minnesota Department of Health, Minnesota Pollution Control Agency, Army Corps of Engineers, and citizens; and

WHEREAS, the comments from the State Agencies now support the determination of Adequacy for the Jordan Aggregates Final Environmental Impact Statement; and

WHEREAS, Scott County has considered the comments that were received and finds that the revised Jordan Aggregates Final Environmental Impact Statement is adequate in addressing issues of primary importance as noted in the EIS.

NOW, THEREFORE, BE IT RESOLVED that the Scott County Board of Commissioners has made a determination that the Jordan Aggregates Final Environmental Impact Statement is adequate and directed staff to prepare findings and recommendations for further consideration of an Interim Use Permit by the Scott County Planning Commission and County Board.

COMMISSIONERS	VOTE
Wagner	☐ Yes ☐ No ☐ Absent ☐ Abstain
Wolf	☐ Yes ☐ No ☐ Absent ☐ Abstain
Menden	☐ Yes ☐ No ☐ Absent ☐ Abstain
Marschall	☐ Yes ☐ No ☐ Absent ☐ Abstain
Ulrich	☐ Yes ☐ No ☐ Absent ☐ Abstain

State of Minnesota)
County of Scott)

I, Gary L. Shelton, duly appointed qualified County Administrator for the County of Scott, State of Minnesota, do hereby certify that I have compared the foregoing copy of a resolution with the original minutes of the proceedings of the Board of County Commissioners, Scott County, Minnesota, at their session held on the 15th day of July, 2014 now on file in my office, and have found the same to be a true and correct copy thereof.
Witness my hand and official seal at Shakopee, Minnesota, this 15th day of July, 2014.

_____ County Administrator

_____ Administrator's Designee

Today there is a decision to be made and it will not just impact our future but our children's also. I think that will be the most significant; what kind of legacy are we leaving them?

I will try to point out what some of the issues are that still should be addressed in the FEIS. Above all the contamination and the magnitude of it is overwhelming. There is not a site that is comparable to this, so there is no track record to rely on. I believe that Barr Engineering did an analysis of the costs associated to clean the contamination – the developer should be well aware of the costs. See Barr Technical Memorandum dated 9-19-2013 & 3-13-2014.

Sand Creek Drainage – DNR has a problem with it breaching the berm into the project area. See DNR letter dated 12-20-2013. This past flooding event is a good example of the power it has on erosion. How would you manage or prevent it?

FEIS is not complete – MPCA letter dated 12-23-2013 indicated that they would not comment due to insufficient information.

Statute Laws on Contamination of Ground waters – See attached documents.

Draft Monitoring and Mitigation Plan dated March 2014. Introduction – Scott County Board deemed the final EIS to be inadequate in three areas.

Potential Ground Water Quality Impacts - types of contaminants.

Pumping Well – identified 24 wells near the site.

Metropolitan Council – review of Effect of Mine Pit Draw Down on Wetlands – concern would expose the quaternary aquifer.

Draft Monitoring Mitigation Plan
FEIS as proposed inadequate

1	Introduction – Inadequate in three areas
1.2.1	Potential Groundwater Quality Impact
2.2.5	Pumping Wells

Statute Laws on Groundwater Contamination

103H001	Degradation Prevention Goal
116D.04 Subdivision 6	Prohibition
Chapter 7600	Underground Waters
7060.01	Purpose
7060.02	Policy
7060.04	Uses of underground water
7060.05	Non-degradation policy
7060.06	Subp.2.
Metro Council	Effect of mine pit withdrawal on Wetlands
MPCA	Inadequacy of FEIS
DNR	Sand Creek - impacts

1.0 Introduction

This Monitoring and Mitigation (Plan) describes the location, methods, and reporting requirements for environmental monitoring of the proposed Jordan Aggregates Sand and Gravel mine (Site), located in Sand Creek Township near Jordan, Minnesota. In addition to monitoring, various response actions and mitigation procedures are described in response to the data collected during monitoring and to other conditions that may ensue at the Site. The location of the Site and surrounding features are shown on Figure 1.

Potential environmental impacts were identified in the draft and final Environmental Impact Statement (EIS) for the proposed Jordan Aggregates Sand and Gravel mine (November 25, 2013). Scott County is the Responsible Governmental Unit (RGU) responsible for the EIS. Based on comments received on the Final EIS from various regulatory agencies and the public, the Scott County Board deemed the Final EIS to be inadequate in three areas: addressing the issue of potential ice jams and the proposed mitigation of that, addressing the potential for permanent incursion of Sand Creek into the mine pit and of monitoring and mitigation for impacts to the quaternary aquifer from periodic flooding of the deep mine pit from Sand Creek and requested that new monitoring and mitigation plans be developed that would address the deficiencies identified in these monitoring and/or mitigation plans developed by the project proposer; Jordan Aggregates LLC. Scott County agreed to work with regulatory agencies and other stakeholders to draft a revised Plan.

If the proposed project is approved through the EIS process, this Plan is intended to provide the basis for monitoring and mitigation that will be established by the Scott County Interim Use Permit (IUP) for the Site. It may be amended or otherwise revised as part of the IUP permitting process.

1.1 Project Description Summary

Jordan Aggregates, LLC proposes operating a sand and gravel mine at the property located at 17825 Valley View Drive in Sand Creek Township, Scott County, Minnesota, described as the southwest quarter of Section 8 and the northwest quarter of Section 17, Township 114 North, Range 23 West. The mine will encompass 84.7 acres and is anticipated to operate for approximately 25 years. Mined areas will be reclaimed using on-site overburden materials and imported fill.

The purpose of the Project is to mine aggregate resources from the Site, process the mined aggregate for commercial sale, and reclaim portions of the mine with overburden materials from within the mining limits as well as clean soil fill materials imported from off-site. The mining and processing portions of the Project will produce sand and gravel aggregate products that are in demand for construction and development projects in the region. The mining operations may in the future include operation of a

There are several wetland areas north and northwest of the Site, between the Minnesota River and Valley View Road. Some of these wetlands have water-stage elevations that are above the water table, indicating perching conditions on fine-grained deposits such as silt and clay. There are some wetlands that appear to be surface expressions of the water table, due to their depth. The perched wetlands may provide some recharge to the aquifer system but the amount is negligible compared to the effects of regional upwelling of groundwater in this discharge area. For those wetlands that are surface expressions of the water table, groundwater from the Site can be expected to discharge, flow under, or flow through the wetlands. These wetlands perform the same function as the Minnesota River – they serve as groundwater discharge features.

2.2.5 Pumping Wells

Twenty four (24) water supply wells were identified near the Site, include 19 domestic wells. Five other wells include: a well owned by the Metropolitan Mosquito Control District; the Juvenile Alternative Facility well; and two wells at the SCALE training facility. The majority of these wells are completed in the surficial aquifer. There are also two wells at a homestead on the Project Site that are completed in the upper Tunnel City-Wonowoc aquifer (the Greenhouse Well and the House Well). Two residences in the vicinity recently replaced their surficial aquifer wells with new wells complete in the Tunnel City-Wonowoc aquifer.

Domestic wells generally are not pumped frequently or for long duration and have an insignificant effect on groundwater flow conditions. The non-domestic wells pumped at the following average rates:

- Metropolitan Mosquito Control District Well: 20 gpm
- Juvenile Alternative Facility Well: 40 gpm
- SCALE building water supply Wells: 50 gpm (combined)
- SCALE training exercise Well: 0 gpm

The above rates are similar to those used in the McCain and Associates, Inc. (2009) evaluation for the Jordan Aggregates EAW with one exception – this evaluation assumed that the SCALE training exercise well was only used sparingly. McCain and Associates, Inc. (2009) assumed an average rate of 300 gpm that is not reflective of the average pumping rate of the well.

2.3 Summary of Modeling Results for Flood Events

A groundwater-flow model was developed and calibrated for the Site as part of the EIS. This model was used to predict the effects of flood inundation of the mine pit by Sand Creek on groundwater levels and groundwater flow direction. The flow model was also used in conjunction with a solute-transport model to predict where inundated pond water would migrate to in the groundwater system following a flood.

Below the water table, a barge-mounted clamshell-type excavator will be used.

Aggregate processing is expected to include crushing, screening and washing of natural aggregate products, as well as recycled concrete and asphalt in order to produce desirable gradations and aggregate products. Temporary portable hot mix asphalt and/or concrete batch plants may be operated on the Project Site through a separate Interim Use Permit applied for annually to provide material for area construction projects.

1.2 Summary of Potential Impacts

The EIS identified two areas of primary concern for the project that require monitoring and potential mitigation: impacts to groundwater quality and impacts associated with the formation of ice dams on Sand Creek. Alternatives to Site design and operation that would reduce the risk of impacts for these two conditions were not identified in the EIS. Both areas of concern are the result of the proposed mine pit's location in the flood plain of Sand Creek. Periodic flooding of the mine pit by Sand Creek during the operational life of the mine was found to be highly likely, due to the proximity of the mine pit to Sand Creek and the flood frequency. Based on the conceptual alternatives for the end uses of the Site, these conditions would likely also occur after mining at the Site is completed.

1.2.1 Potential Groundwater Quality Impacts

An aspect of the proposed mining at the Site that is unique in Minnesota is the excavation of a pit that will likely be inundated by stream flooding multiple times during and after mining operations. Portions of the mine pit will be excavated well below the water table in the Quaternary sand-and-gravel (water-table) aquifer. Flood water from Sand Creek will periodically overflow its banks and inundate the mine pit. Flooding will most likely occur during spring snowmelt but flooding of Sand Creek later in the year has occurred in the past. The types of contaminants and their concentrations in flood water from Sand Creek are not well-documented. It is also not known if the inundating flood water will displace groundwater in the mine pit, mix with groundwater in the mine pit, or stratify on top of the groundwater. It is also not known whether or not contaminants may adhere to sediment particles and settle to the bottom of the mine pit where they may concentrate.

Groundwater-flow and solute-transport modeling of the proposed mine pit, performed as part of the EIS, showed that mine-pit water will migrate in the Quaternary sand-and-gravel aquifer to the north, towards riparian wetlands and the Minnesota River. One and possibly two existing non-community public water supply wells and one residential well were shown to be subject to contamination especially resulting from flood events. One well (SCALE facility well) was found to have a greater potential for contamination from flood waters that may inundate the mine and migrate into the water-table aquifer. The modeling predicted that there is a potential for aquifer water-quality degradation in areas north of the mine pit, which might

103H.001 DEGRADATION PREVENTION GOAL.: *"It is the goal of the state that groundwater be maintained in its natural condition, free from any degradation caused by human activities. It is recognized that for some human activities this degradation prevention goal cannot be practicably achieved. However, where prevention is practicable, it is intended that it be achieved. Where it is not currently practicable, the development of methods and technology that will make prevention practicable is encouraged."*

116D.04 Subdivision 6

Prohibitions.

"No state action significantly affecting the quality of the environment shall be allowed, nor shall any permit for natural resources management and development be granted, where such action or permit has caused or is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern for the protection of its air, water, land and other natural resources from pollution, impairment, or destruction. Economic considerations alone shall not justify such conduct."

CHAPTER 7060, UNDERGROUND WATERS

7060.0100 PURPOSE.

It is the purpose of this chapter to preserve and protect the underground waters of the state by preventing any new pollution and abating existing pollution.

7060.0200 POLICY.

It is the policy of the agency to consider the actual or potential use of the underground waters for potable water supply as constituting the highest priority use and as such to provide maximum protection to all underground waters. The ready availability nearly statewide of underground water constitutes a natural resource of immeasurable value which must be protected as nearly as possible in its natural condition. For the conservation of underground water supplies for present and future generations and prevention of possible health hazards, it is necessary and proper that the agency employ a nondegradation policy to prevent pollution of the underground waters of the state.

7060.0400 USES OF UNDERGROUND WATERS.

The waters of the state are classified according to their highest priority use, which for underground waters of suitable natural quality is their use now or in the future as a source of drinking, culinary, or food processing water. Suitability is to be construed as meaning that the waters in their natural state can be used for such purposes after such purification or treatment processes as may be prescribed by the Minnesota Department of Health or the

Minnesota Department of Agriculture. This classification is established to protect the underground waters as potable water supplies by preventing and abating pollution. In making this classification, the agency recognizes that the underground waters of the state are contained in a series of related and often interconnected aquifers, such that if sewage, industrial waste, other waste, or other pollutants enter the underground water system, they may spread both vertically and horizontally. Thus, all underground waters are best classified for use as potable water supply in order to preserve high quality waters by minimizing spreading of pollutants, by prohibiting further discharges of wastes thereto, and to maximize the possibility of rehabilitating degraded waters for their priority use.

7060.0500 NONDEGRADATION POLICY.

It is the policy of the agency that the disposal of sewage, industrial waste, and other wastes shall be controlled as may be necessary to ensure that to the maximum practicable extent the underground waters of the state are maintained at their natural quality unless a determination is made by the agency that a change is justifiable by reason of necessary economic or social development and will not preclude appropriate beneficial present and future uses of the waters.

7060.0600 STANDARDS.

Subpart 1.

Prohibition against discharge into saturated zone.

No sewage, industrial waste, or other wastes shall be discharged directly into the zone of saturation by such means as injection wells or other devices used for the purpose of injecting materials into the zone of saturation, except that the discharge of cooling water under existing permits of the agency may be continued, subject to review of the permit by the agency for conformance with subpart 3.

Subp. 2.

Prohibition against discharge into unsaturated zone.

No sewage, industrial waste, other waste, or other pollutants shall be allowed to be discharged to the unsaturated zone or deposited in such place, manner, or quantity that the effluent or residue therefrom, upon reaching the water table, may actually or potentially preclude or limit the use of the underground waters as a potable water supply, nor shall any such discharge or deposit be allowed which may pollute the underground waters. All such possible sources of pollutants shall be monitored at the discharger's expense as directed by the agency.

Subp. 3.

Control measures.

Treatment, safeguards, or other control measures shall be provided by the person responsible for any sewage, industrial waste, other waste, or other pollutants which are to be or have been discharged to the unsaturated zone or deposited there, or which have been discharged to the zone of saturation, to the extent necessary to ensure that the same will not constitute or continue to be a source of pollution of the underground waters or impair the natural quality thereof.

Subp. 8.

Natural state of groundwater.

The groundwater may in its natural state have some characteristics or properties exceeding the standards for potable water supplies. Where the background level of natural origin is reasonably definable and is higher than the accepted standard for potable water and the hydrology and extent of the aquifer are known, the natural level may be used as the standard.

7060.0800 DETERMINATION OF COMPLIANCE.

In making tests or analyses of the underground waters of the state, or of sewage, industrial wastes, or other wastes, to determine compliance with the standards, samples shall be collected in such manner and place and of such type, number, and frequency as may be considered satisfactory by the agency from the viewpoint of adequately reflecting the condition of the underground water and the effects of the pollutants upon the specified water uses. The samples shall be preserved and analyzed in accordance with procedures described in the 13th edition of Standard Methods for the Examination of Water and Wastewater, 1971, by the American Public Health Association, American Water Works Association, and the Water Pollution Control Federation, and any revisions or amendments thereto, or other methods acceptable to the agency.

7060.0900 VARIANCE.

In any cases where, upon application of the responsible person or persons, the agency finds that by reason of exceptional circumstances the strict enforcement of any provision of these standards would cause undue hardship, that disposal of the sewage, industrial waste, or other waste is necessary for the public health, safety, or welfare, or that strict conformity with the standards would be unreasonable, impractical, or not feasible under the circumstances, the agency in its discretion may permit a variance therefrom upon such conditions as it may prescribe for prevention, control, or abatement of pollution in harmony with the general purpose of these standards and the intent of the applicable state and federal laws.

Statutory Authority:

MS s 115.03; 115.44

Posted:

Metropolitan Council

December 26, 2013

Ms. Kate Sedlacek
Scott County Environmental Health Department
200 Fourth Avenue West
Shakopee, MN 55379

RE: Jordan Aggregates LLC Proposed Mining Operation
Final Environmental Impact Statement (FEIS)
Sand Creek Township, Scott County Minnesota
Metropolitan Council District 4
Metropolitan Council Review File No. 20822-3

Dear Ms. Sedlacek:

The Metropolitan Council received the Final Environmental Impact Statement (FEIS) for the proposed aggregate mining project on November 25, 2013. The document adequately responds to the water supply-related issues raised in our earlier reviews of the proposed project. The following comments are offered concerning issues addressed in the FEIS.

3.2.4 Effect of Mine Pit Drawdown on Wetlands

Site groundwater modeling predicts that the mine pit and wash water well will result in a net reduction in groundwater inflows into area wetlands during proposed mining operations. Council staff recommends that water levels be monitored in the wetland complex north of the site within the Minnesota Valley National Wildlife Refuge for at least the first five years of 'pond-phase' mining to insure that actual drawdown does not exceed projected levels that might result in negative wetland function and value impacts, without appropriate mitigation.

Council staff is in agreement with the County's findings in the document, that the proposed mine pit excavation project would expose the quaternary aquifer in and around the site to increased frequencies and levels of water quality degradation.

This concludes the Council's review of the DEIS. The Council will take no formal action on the document. If you have any questions or need further information, please contact Jim Larsen PE, principal reviewer, at 651-602-1159.

Sincerely,

LisaBeth Barajas
Manager, Local Planning Assistance

cc: Gary Van Eyll, Metropolitan Council District 4
Angela Torres, Sector Representative
Judy Sventek, Manager – Water Resources Assessment
Ali Elhassan, Water Supply Manager
Raya Esmaeili, Reviews Coordinator

N:\CommDev\LPA\Counties\Scott\Letters\2013\ScottCoFEIS1.docx

Minnesota Pollution Control Agency

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us Equal Opportunity Employer

December 23, 2013

Ms. Kate Sedlacek
Scott County Environmental Health Department
Government Center A104
200 Fourth Avenue West
Shakopee, MN 55379-1220

RE: Jordan Aggregates Proposed Mining Operation Final Environmental Impact Statement

Dear Ms. Sedlacek:

Thank you for the opportunity to review and comment on the Final Environmental Impact Statement (Final EIS) for the Jordan Aggregates Proposed Mining Operation project (Project) located in Jordan, Minnesota.

The Minnesota Pollution Control Agency (MPCA) previously provided comment letters on the EIS Scope and the Draft EIS for this project. These letters highlighted our expectation that the review of permit applications and the development of proposed permits, which would presumably contain necessary mitigation, should occur concurrently with the preparation of the Draft EIS as specified in the environmental review scoping process. Because the MPCA has not received any permit applications for the proposed Project, we were unable to develop and gather permit information concurrently with the preparation of the EIS as per the intent of environmental review. Consequently, this has hampered our ability to determine if there will be appropriate mitigation, provides no assurance of follow-up, and may constitute a significant inadequacy of the Final EIS.

In addition, the Final EIS acknowledges the potential for degradation of the surficial sand-and-gravel aquifer as a result of the proposed Project but does not propose any form of mitigation. For this reason, the MPCA believes that monitoring of the water quality of the aquifer is necessary to determine if degradation is taking place during and after mining. Therefore, the MPCA recommends the Project proposer be required by the County to apply for and receive an individual National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permit for post construction activities to ensure appropriate ground water monitoring and mitigation plans are in place to protect the aquifer from degradation.

We appreciate the opportunity to review this project. Please be aware that this letter does not constitute approval by the MPCA of any or all elements of the Project for the purpose of pending or future permit action(s) by the MPCA. Ultimately, it is the responsibility of the Project proposer to secure any required permits and to comply with any requisite permit conditions. If you have any questions concerning our review of this Final EIS please contact me at 651-757-2508.

Sincerely,

Karen Kromar

Karen Kromar
Planner Principal
Environmental Review Unit
Resource Management and Assistance Division

KK:je

cc: Craig Affeldt, MPCA, St. Paul
John Hensel, MPCA, St. Paul
Theresa Haugen, MPCA, Brainerd

From:	Affeldt, Craig (MPCA) <craig.affeldt@state.mn.us>
Sent:	Tuesday, July 08, 2014 8:37 AM
To:	Frechette, Al; Sedlacek, Kate
Cc:	Udd, Jeff (MPCA); Haugen, Theresa (MPCA); Gawrys, Elizabeth (MPCA); Kromar, Karen (MPCA)
Subject:	Jordan Aggregates Final EIS

The Minnesota Pollution Control Agency staff has reviewed the Final Environmental Impact Statement for the Jordan Aggregates project. We believe that the FEIS presents a reasonable analysis and assessment of mitigation measures which are necessary to properly address future impacts associated with the proposed project and that a determination that the FEIS is adequate is justified.

As you are aware, the development of an NPDES permit for the facility is underway. We invite continued participation of Scott County in this process to help ensure that appropriate mitigation measures and monitoring requirements are adequately addressed.

Craig Affeldt, Supervisor
Environmental Review Unit
Minnesota Pollution Control Agency
651-757-2181

Minnesota Department of Natural Resources
Division of Ecological and Water Resources
1200 Warner Road
Saint Paul MN 55106-6793

Minnesota
DEPARTMENT OF
NATURAL RESOURCES

December 20, 2013

Transmitted Via E-mail

Kate Sedlacek
Scott County Environmental Health Department
200 Fourth Avenue West
Shakopee, Minnesota 55379
ksedlacek@co.scott.mn.us

Re: Jordan Aggregates LLC Project Final Environmental Impact Statement (FEIS)

Dear Ms. Sedlacek:

The Minnesota Department of Natural Resources (DNR) Central Region has reviewed the FEIS for the Jordan Aggregates LLC Project (the Project) located in Sand Creek Township. As previously stated following our review of the Draft EIS (February 2013), most of our earlier concerns have been appropriately addressed. However, the following comments are offered:

Section 3.10.2 addresses Impacts to Sand Creek. It should be acknowledged that if Sand Creek breached the berm into the Project area, upstream and downstream impacts to geomorphology are likely. Further, the project proposer should be held to restoration of impacted areas upstream and downstream of the Project site, in addition to any affected area directly adjacent to the Project.

The FEIS correctly identifies the need for a water appropriation permit for a new well. Water usage is estimated at 500,000 to 2 million gallons annually. A DNR Waters Appropriation permit application should be submitted to the DNR for review. The DNR is required to make permit decisions within 30 days following the completion of an EIS unless a later date is agreed upon by participating parties.

The Project borders the Minnesota Valley National Wildlife Refuge and is surrounded by Central Region Regionally Significant Ecological Areas (CRRSEAs) of moderate, high and outstanding rank. CRRSEAs are identified as significant terrestrial and wetland resources that support a variety of plant and animal species, and provide habitat connectivity to other ecologically intact areas.

Because of the proximity of these natural areas, wildlife and nongame animal species will be at increased risk of mortality from commercial vehicle traffic and construction activities. During erosion-control activities, the DNR encourages the use of wildlife-friendly erosion control mesh (non-plastic, non-welded). Traditional erosion control mesh is known to cause injury and may be fatal to wildlife, particularly reptiles and amphibians.

Thank you for the opportunity to review the FEIS for this Project. If you have any questions about these comments, please contact me.

Sincerely,

Brooke

Brooke Haworth
Environmental Assessment Ecologist, Central Region
MnDNR Division of Ecological and Water Resources
1200 Warner Road, St. Paul, MN 55106
Phone: 651-259-5755
Email: Brooke.haworth@state.mn.us

CC: DNR Regional Environmental Assessment Team, Randall Doneen, Melissa Doperalski, Liz Harper, Dan Lais, Scot Johnson, Lisa Joyal, Erica Hoaglund, Christopher E. Smith, Jennie Skancke, Diana Regenscheid, Daryl Ellison (DNR)

ERDB 20100053-0004

From: Haworth, Brooke (DNR) <Brooke.Haworth@state.mn.us>
Sent: Monday, July 07, 2014 4:22 PM
To: Sedlacek, Kate
Cc: Doneen, Randall (DNR); MacDonald, Michael (DNR); Skancke, Jennie (DNR); Harper, Liz (DNR); Yearwood, Terri L (DNR); Daniels, Jeanne M (DNR); Haworth, Brooke (DNR)
Subject: RE: Jordan Aggregates revised FEIS comments due July 7, 2014

Ms. Sedlacek,

The Department of Natural Resources has received the Jordan Aggregates revised FEIS issued by Scott County on June 23, 2014. Hydrology and groundwater staff have reviewed the document and have the following response.

Replacement of the downgradient water supply wells with deeper wells should eliminate possible impacts to the shallow groundwater use. While shallow groundwater contamination is the jurisdiction of the MPCA, we offer the suggestion that, should it be necessary, the pump-and-treat option presented for treating impacted shallow groundwater would be most appropriate for an active mining project. It is correct that a water appropriation permit would be required for this option. Comments were submitted previously regarding potential impacts to physical geomorphology in the floodplain next to Sand Creek, and no further comments on surface hydrology will be made.

Thank you for the opportunity to review this document. Please contact me if you have questions regarding this email.

Sincerely,

Brooke Haworth
Environmental Assessment Ecologist, Central Region
MnDNR Division of Ecological and Water Resources
1200 Warner Road, St. Paul, MN 55106
Phone: 651-259-5755
Email: Brooke.haworth@state.mn.us

From: Sedlacek, Kate [mailto:KSedlacek@co.scott.mn.us]
Sent: Monday, July 07, 2014 9:31 AM
To: Germundson, Travis (BWSR); Depart of Commerce Ray Kirsch; Balk, Becky (MDA); *MDH_Review; Doneen, Randall (DNR); Moynihan, Debra (DOT); EPA Kenneth Westlake; Cerda, Melissa (MIAC); Kromar, Karen (MPCA); MetCouncil Raya Esmaeili; Nelson, Paul; Affeldt, Craig (MPCA); Anfinson, Scott (ADM); Technology and Science Helen Burke; Kuphal, Troy; US Army Corp Engineers; Udd, Jeff (MPCA); Haugen, Theresa (MPCA); Haworth, Brooke (DNR); Skancke, Jennie (DNR)
Subject: Jordan Aggregates revised FEIS comments due July 7, 2014

To.Interested Person:

Comments on the Jordan Aggregates revised FEIS are due today, July 7th, 2014. The 10 business day public review period for the revised FEIS began June 23, 2014. The revised Jordan Aggregates FEIS includes a Monitoring and Mitigation Plan prepared by Barr Engineering for the EIS team. The review should focus on the issue of groundwater degradation and the mitigation plan that Barr Engineering prepared for the EIS team.

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Technical Memorandum –D R A F T

To: Scott County
From: Ray Wuolo, Barr Engineering Co.
Subject: Approximate Costs for Mitigation Alternatives, Jordan Aggregates LLC
Date: March 13, 2014
Project: 23701010.00

Purpose and Scope

This memorandum presents estimates for approximate costs of construction and implementation of monitoring and alternatives for mitigation of environmental impacts at the proposed Jordan Aggregates LLC sand-and-gravel mine in Sand Creek Township, Scott County, Minnesota. The purpose of developing these approximate costs is to provide further input into selecting possible mitigation strategies, should they become necessary and to provide a basis for establishing financial assurances for future implementation. The monitoring and mitigation proposed for this Site are described in a separate Monitoring and Mitigation Plan. Monitoring during mine operation consists of the following:

1. Routine quarterly monitoring of groundwater quality, mine-pit water quality, water quality of Sand Creek, and groundwater level monitoring.
2. Water quality monitoring immediately following a flood event that inundates the mine pit.

Mitigation actions identified in the plan include the following:

1. Mitigation for groundwater degradation. Two alternatives were identified:
    a. Pumping of the mine pit to remove contaminated water following flooding;
    b. Implementation of a pump-out system to capture contaminated groundwater.
2. Mitigation for nearby wells that may become contaminated as a result of the mine. This mitigation involves replacing existing sand-and-gravel aquifer wells with new wells completed in the deeper Wonowoc Formation (formerly called the Ironton-Galesville Sandstone) and has been proposed to be performed by the mine owner before mining commences. The approximate costs for implementing this alternative are not estimated in this evaluation.
3. Mitigation of stream bank erosion resulting from mine activities.
4. Mitigation of additional contributions to ice jams at the 173rd Street bridge over Sand Creek as a result of additional ice surface from the mine pit. Several mitigation alternatives were identified:

a. Ice weakening to break up the mine pit ice into small pieces via auguring and/or use of heavy equipment;
b. Placement of ice booms to contain mine pit ice on-site during spring flood events;
c. Placement of tension weirs to contain mine pit ice on-site during spring flood events;
d. Installation of regularly spaced steel or concrete piers in the berm and spillway to contain large ice pieces and beak up ice into sufficiently small chunks.

Method for Approximating Costs

The costs for implementing the monitoring and mitigation activities were approximated by:

1. separating activities into capital (i.e. construction or purchase) expenditures and recurring activities, such as monitoring, operation, and maintenance;
2. defining the major elements of each activity, based on the likely requirements of implementation;
3. approximating costs for each element in 2014 dollars, using quotes from vendors (where available), recent experience in estimating or procuring similar equipment, materials or activities, and/or engineering judgment;
4. For reoccurring activities, estimating the likely frequency of occurrence and converting those occurrences into fractional annual occurrences. For example, if it was estimated that a pump would likely require replacement once every 5 years at a cost of $2,000 (in 2014 dollars), that cost was annualized to be $400 per year.
5. Calculating the Present Worth of capital and reoccurring activities in 2014 dollars, assuming a discount rate and duration. The Present Worth represents the approximate funds in 2014 dollars that would likely be required to be set aside in 2014 in order to pay for the various future activities, allowing for the total time period of implementation and the interest that would accrue.

It is important to recognize that these are estimates of approximate cost for the purposes described above and not estimates that should be relied upon for design, construction, or procurement.

Capital costs were assumed to accrue in 2014 (i.e. the Present Worth is equal to the approximated cost). It is unknown whether groundwater degradation mitigation will ever be needed but it is reasonably certain that there will be flooding events that inundate the mine pit in the near future. Therefore, if groundwater mitigation is necessary, it will likely be implemented within a few years. For mitigation of ice jams, the various alternatives require obtaining, constructing, or otherwise procuring equipment and materials required for implementation before an ice-jam situation occurs.

Approximate costs for reoccurring or future events were converted to annual costs, as described above. In some cases, the reoccurrence interval can be reliably approximated (e.g., continuous operation of a pump-out system or quarterly sampling). But several of the reoccurring future events are triggered by flooding of the mine pit. For purposes of approximating cost for this evaluation, it was assumed that a flood inundation event would occur once every year (i.e. an annual reoccurrence of 1). The reason for assuming annual flooding is the presence of the spillway, with a crest elevation of 726 feet, msl, which will have the effect causing the mine pit area to flood on a more frequent basis than without the spillway present. Bank-full stage of Sand Creek is assumed to be at flows of 924 cfs, which at the Site is results in an elevation of 728 feet, msl. It was also assumed that ice jam mitigation would require implementation during each flood event. Obviously, it is impossible to know exactly when future flooding of the mine pit will occur but the past history of flooding indicates that inundation will occur with the 10-year flood event and will likely occur with much more frequently with the spillway during less severe flood events.

The duration of future activities is also an unknown variable. It is assumed that the mine pit will be present in some form in perpetuity and will continue to be subject to periodic inundation by flood waters from Sand Creek. If flooding of the mine pit does result in groundwater degradation and/or increased ice jam issues, those conditions would also be present into the future and would require mitigation. As is often the case, the Present Worth of future occurrences becomes less sensitive to duration as the total time increases. In other words, there may be little difference it the total Present Worth for a period of 50 years compared to 70 years. For this reason, several future periods were evaluated.

The Discount Rate (or interest rate) determines what the estimated value of what future money will be in current dollars. Put another way, if money were put into an interest-bearing account today in order to pay for future costs, the amount of money put away would need to be some initial sum, plus the interest accrued on that sum over time. The sum plus interest must be sufficient to keep up with the periodic outlays (which are assumed to occur annually in this evaluation). If the interest rate is higher, less initial funds need to be set aside. For purposes of this evaluation, it was assumed that the discount rate is equal to the current 30-year Treasury bond: 3.95%.

Cost Assumptions and Calculations

Installation of New Monitoring Wells and Dedicated Sampling Equipment

There are currently 4 shallow monitoring wells (MW-1, MW-2, MW-3, MW-4) and 2 piezometers (PZ-1, PZ-2) at the Site. The Monitoring and Mitigation Plan calls for six additional monitoring wells. The six new wells and the four existing wells will have dedicated sampling pumps installed in them.

The approximate cost for installation of new monitoring wells is:

Monitoring Well Installation	Unit Cost	Unit	No. of Units	Capital Cost	Cost per Year
Installation				$47,820	NA
Mobilization & permitting	$5,000	each	1	$5,000	NA
Drilling	$40	ft	490	$19,600	NA
F&I Riser (PVC)	$20	ft	265	$5,300	NA
F&I Riser (Steel)	$40	ft	165	$6,600	NA
F&I Screens	$100	each	6	$600	NA
F&I filter pack and grout	$3	ft	490	$1,470	NA
F&I protective casing/pipe	$500	each	6	$3,000	NA
F&I dedicated pumps	$500	each	10	$5,000	NA
Flood protected casings	$250	each	5	$1,250	NA

Monitoring wells have maintenance costs, including periodic replacement of dedicated pumps and annual permit fees;

Maintenance	Unit Cost	Unit	No. of Units	Capital Cost	Cost per Year
Monitoring System Maintenance					$550
Dedicated sampling pump replacement	$500	1	0.1	NA	$50
Annual monitoring well permit fee	50	10	1.0	NA	$500

Quarterly Monitoring

Annualized costs for quarterly monitoring are based on the schedule of analytes that is described in the Monitoring and Mitigation Plan. Costs were obtained from Minnesota Department of Health certified labs for the identified analytes and methods (except for stable isotopes).

	Unit Cost	No. of Units per event	Unit	No. Events per year	Cost per year
Annual Quarterly Sampling					**$46,430**
Ammonia - Nitrogen as N	$30	15	each	4	$1,800
BOD5	$30	15	each	2	$900
Chloride & Nitrate/Nitrate	$70	15	each	3	$3,150
Isotope Ratio: O18/O16 & H2/H1	$50	15	each	2	$1,500
Lab conductivity	$15	15	each	4	$900
Metals	$110	15	each	2	$3,300
Phosphorus, Total	$22	15	each	4	$1,320
Total Dissolved Solids	$15	15	each	4	$900
Total Suspended Solids	$15	15	each	4	$900
SVOCs (inc. PAH)	$160	15	each	2	$4,800
VOCs	$62	15	each	2	$1,860
Pesticides	$110	15	each	2	$3,300
Chlorinated Herbicides	$95	15	each	2	$2,850
DRO	$43	15	each	2	$1,290
Total Coliforms	$30	15	each	2	$900
Sampling (labor)	$110	25	hr	4	$11,000
Sampling (mtrls. & equip.)	$400	1	each	4	$1,600
QA/QC Labor	$110	4	hr	4	$1,760
Reporting (labor)	$120	20	hr	1	$2,400

The "No. of Units per event" refers to the number required for each sampling round. For example, there are 11 monitoring wells and 4 pond samples. Costs are in 2014 dollars. The total approximate cost for quarterly sampling is $46,430, which includes estimates on time and rates for sampling, quality assurance review, and reporting.

Flood-Event Monitoring

Flood-event monitoring takes place immediately after flood waters recede from the inundated mine pit, as described in the Monitoring and Mitigation Plan. Initial sampling events require expedited analyses, which results in an increased cost of approximately two-times the regular turn-around rates.

	Unit Cost	No. of Units per event	Unit	No. Events per year	Cost per year
Flood Sampling					$5,424
Ammonia - Nitrogen as N	$60	18	each (expedited)	0.1	$108
BOD5	$60	18	each (expedited)	0.1	$108
Chloride & Nitrate/Nitrate	$140	18	each (expedited)	0.1	$252
Isotope Ratio: O18/O16 & H2/H1	$100	18	each (expedited)	0.1	$180
Lab conductivity	$30	18	each (expedited)	0.1	$54
Metals	$220	18	each (expedited)	0.1	$396
Phosphorus, Total	$44	18	each (expedited)	0.1	$79
Total Dissolved Solids	$30	18	each (expedited)	0.1	$54
Total Suspended Solids	$30	18	each (expedited)	0.1	$54
SVOCs (inc. PAH)	$320	18	each (expedited)	0.1	$576
VOCs	$124	18	each (expedited)	0.1	$223
Pesticides	$220	18	each (expedited)	0.1	$396
Chlorinated Herbicides	$190	18	each (expedited)	0.1	$342
DRO	$86	18	each (expedited)	0.1	$155
Total Coliforms	$60	18	each (expedited)	0.1	$108
Ammonia - Nitrogen as N	$30	18	each	0.1	$54
BOD5	$30	18	each	0.1	$54
Chloride & Nitrate/Nitrate	$70	18	each	0.1	$126
Isotope Ratio: O18/O16 & H2/H1	$50	18	each	0.1	$90
Lab conductivity	$15	18	each	0.1	$27
Metals	$110	18	each	0.1	$198
Phosphorus, Total	$22	18	each	0.1	$40
Total Dissolved Solids	$15	18	each	0.1	$27
Total Suspended Solids	$15	18	each	0.1	$27
SVOCs (inc. PAH)	$160	18	each	0.1	$288
VOCs	$62	18	each	0.1	$112
Pesticides	$110	18	each	0.1	$198
Chlorinated Herbicides	$95	18	each	0.1	$171
DRO	$43	18	each	0.1	$77
Total Coliforms	$30	18	each	0.1	$54
Sampling (labor)	$110	32	hr	0.1	$352
Sampling (mtrls. & equip.)	$400	4	each	0.1	$160
QA/QC Labor	$110	4	hr	0.1	$44
Reporting (labor)	$120	20	hr	0.1	$240

Evacuation and Treatment of Water from Flooded Mine Pit

This mitigation alternative is intended to prevent groundwater degradation from the flooded mine pit and assumes that mitigation must be implemented. A description of the mitigation is in the Monitoring and Mitigation Plan. Approximate capital and annualized costs are listed below. (Note, the example below shows a mitigation reoccurrence of once every 10 years).

Evacuation & Treatment of Contaminated Mine Pit Water	Unit Cost	Unit	No. of Units	Capital Cost	Cost per Year
Installation				$59,000	NA
Pumps (20 hp)	$10,000	each	2	$20,000	NA
Pump structure	$20,000	each	1	$20,000	NA
Piping	$4,000	each	1	$4,000	NA
Settling Basins	$5,000	each	2	$10,000	NA
Discharge Structures	$3,000	each	1	$3,000	NA
Controls and appurtenances	$2,000	each	1	$2,000	NA
Engineering and Design	$130	hr	60	$7,800	NA
County Review	$180	hr	24	$4,320	NA
Yearly Operation & Maintenance				NA	$71,180
Portable treatment unit (RO)	$20,000	yr	1	NA	$20,000
Electrical Power	$4,000	yr	1	NA	$4,000
Discharge sampling	$6,900	yr	1	NA	$6,900
maintenance	$5,000	each	1	NA	$5,000
Operator labor	$50	hr	400	NA	$20,000
Sampling Labor	$110	hr	40	NA	$4,400
Sampling mtrls. and equip.	$200	each	8	NA	$1,600
QA/QC labor	$110	hr	24	NA	$2,640
Pump replacement	$10,000	each	.2	NA	$2,000
Reporting	$130	hr	8	NA	$1,040
County Review	$180	hr	20	NA	$3,600

The capital costs assume the purchase of two 20 hp pumps, construction of a pump intake structure for the mine pit, two settling basins, and a discharge structure to Sand Creek. When operating, a portable

reverse osmosis (RO) treatment plant is assumed to be rented. Pumps are assumed to need replacing every five years. If multiple flood events occur within the same season, it is assumed that the amount of additional pumping time will be non-significant.

Pump-Out System

This mitigation alternative is intended to become operational if groundwater degradation near the mine pit is detected. A description of the mitigation is in the Monitoring and Mitigation Plan. Once operated, it is assumed that the pump-out system will continue to operate into the future (this assumption is deemed reasonable because most pump-out systems, once in operation, continue for decades). Approximate capital and annualized costs are listed below.

Pump Out System	Unit Cost	Unit	No. of Units	Capital Cost	Cost per Year
Installation				**$130,320**	**NA**
Wells 50 ft (casing, screen, riser), F&I	$15,000	each	4	$60,000	NA
Pumps (3 hp)	$4,000	each	4	$16,000	NA
Pitless units	$2,000	each	4	$8,000	NA
Piping	$5,000	each	1	$5,000	NA
Controls and appurtenances	$1,200	each	4	$4,800	NA
Discharge line to Creek (buried)	$25,000	each	1	$25,000	NA
Discharge Structures	$2,000	each	1	$2,000	NA
Engineering and Design	$130	hr	40	$5,200	NA
County Review	$180	hr	24	$4,320	NA
Yearly Operation & Maintenance				**NA**	**$41,180**
Portable treatment unit (RO)	$20,000	yr	1	NA	$20,000
Power	$3,000	yr	1	NA	$3,000
Well maintenance and redevelopment	$2,500	each	0.2	NA	$500
Appropriations permit fees	$150	yr	1	NA	$150
Discharge sampling	$6,900	yr	1	NA	$6,900
System maintenance	$5,000	each	0.2	NA	$1,000
Sampling Labor	$110	hr	25	NA	$2,750
Sampling mtrls and equip.	$200	each	4	NA	$800
QA/QC labor	$110	hr	16	NA	$1,760
Pump replacement	$4,000	each	0.2	NA	$800
Reporting	$130	hr	16	NA	$2,080

County Review	$180	hr	8	NA	$1,440

It is assumed that the pump-out system is installed as a capital expense. Well maintenance, pump replacement, etc. are also assumed for operation. An RO treatment unit is assumed to be used on a rental basis.

Bank Stabilization

Bank stabilization assumes placement of rip-rap and vegetation. Annual maintenance is minimal.

Bank Erosion Stabilization	Unit Cost	Unit	No. of Units	Capital Cost	Cost per Year
Installation				$11,000	NA
Rip-Rap placement and grading	$8,000	each	1	$8,000	NA
vegetation	$3,000	each	1	$3,000	NA
Yearly Maintenance	$500	each	1	NA	$500

Ice Jam Mitigation

Four alternatives for ice-jam mitigation were evaluated in the Monitoring and Mitigation Plan. The amount of annual maintenance is dependent on the type of mitigation. A reoccurrence interval of once every 5 years is assumed.

Ice Jam Mitigation (Ice Weakening)	Unit Cost	Unit	No. of Units	Capital Cost	Cost per Year
Yearly Expenses				NA	$6,400
Augering and Pond Ice Break Up	$150	hr	40	NA	$6,000
Equipment rental	$2,000	each	0.2	NA	$400

Ice Boom Deployment	Unit Cost	Unit	No. of Units	Capital Cost	Cost per Year
Capital				$81,000	NA
Ice Boom	$2,000	each	40	$80,000	NA

Tethering /winch system	$5,000	each	0.2	$1,000	NA
Yearly Expenses				NA	**$1,760**
Deployment and removal	$110	hr	16	NA	$1,760

Tension Weir Deployment	Unit Cost	Unit	No. of Units	Capital Cost	Cost per Year
Capital				$120,000	NA
Tension Weirs	$5,000	each	20	$100,000	NA
Attachement Piers	$500	each	40	$20,000	NA
Deployment and removal	$110	hr	80	NA	$8,800

Steel or Concrete Piers	Unit Cost	Unit	No. of Units	Capital Cost	Cost per Year
Capital				$52,500	NA
F&Y Piers	$1,500	each	35	$52,500	NA
Yearly Expenses				NA	$2,150
Periodic replacement of Piers	$1,500	yr	0.1	NA	$150
Debris removal following flood	$2,000	yr	1	NA	$2,000

Present Worth Valuation

A Present Worth valuation calculation was made for each mitigation alternative. For each alternative, durations of 30, 50, 75, and 100 years are presented.

Activity	Capital Expenses	Annual Expense	Interest Rate	Total Present Worth (30 Year duration)	Total Present Worth (50 Year duration)	Total Present Worth (75 Year duration)	Total Present Worth (100 Year duration)
Quarterly Sampling	$0	$46,430	3.95%	$839,673	$1,045,756	$1,155,010	$1,196,488
Monitoring Well Installation	$47,820	$0	3.95%	$47,820	$47,820	$47,820	$47,820
Flood Sampling	$0	$54,238	3.95%	$980,878	$1,221,618	$1,349,244	$1,397,698
Monitoring System Maintenance	$0	$550	3.95%	$9,947	$12,388	$13,682	$14,173

Groundwater Contamination Mitigation							
Alternative 1: Pit Pumping	$59,000	$71,180	3.95%	$1,346,269	$1,662,207	$1,829,700	$1,893,289
Alternative 2: Pump-Out System	$71,180	$41,180	3.95%	$815,908	$998,589	$1,095,589	$1,132,377
Bank Erosion Mitigation	$11,000	$500	3.95%	$20,042	$21,762	$23,438	$23,885
Ice Jam Mitigation							
Alternative 1: Ice Weakening	$0	$6,400	3.95%	$115,742	$144,149	$159,209	$164,926
Alterntive 2: Ice Booms	$81,000	$1,760	3.95%	$112,829	$120,641	$124,782	$126,355
Alternative 3: Tension Weirs	$120,000	$8,800	3.95%	$279,145	$318,205	$338,912	$346,774
Alternative 4: Piers	$52,500	$150	3.95%	$55,213	$56,878	$56,231	$56,365

The following assumptions are incorporated into the Present Worth calculations:

- a constant interest rate
- periodic or reoccurring activities take place on an annualized basis
- cost of labor is constant
- cost of materials and services is constant
- new or different methods or technologies are not incorporated
- analyte lists do not change
- flood reoccurrence is once every 1 years
- ice jams requiring mitigation every 5 years
- other assumptions, as described elsewhere, are included